

REMARKS

This is in response to the non-final Office Action mailed April 8, 2008.

Claims 2-3, 5-8, 10-23, and 27-31 are currently pending in this application. Claims 1, 4, 9, and 24-26 have been canceled. Claims 2-3, 5-8, 10-13, 15-16, 19-23 and 27-28 have been amended. Support for these amendments can be found throughout the specification, for example at p. 5, lines 11-16 and p. 21, lines 6-22.

Claims 29-31 have been added. Support for new claim 29 can be found throughout the specification, for example at p. 5, lines 23-24.

New claim 30 incorporates the elements of claim 1 as well as the definition of Formula I, found in the specification at, e.g., p. 3, line 10-p. 4, line 25; and vinyl acetate found in the specification at, e.g., p. 12, lines 7-21. Additional support for the amendments can be found throughout the specification, for example p. 7, lines 24-36; p. 18, lines 1-4; and original claims 1, 3, 9 and 24. Claims 2, 5-8, 10-13, 15-16, 20-23 and 27 have been amended to depend from new claim 30 instead of canceled claim 1.

Claim 31 incorporates the elements of claim 4 as well as the definition of vinyl acetate found in the specification at p. 12, lines 7-21. Additional support for these amendments can be found throughout the specification, for example at p. 4, lines 1-3; p. 5, lines 10-11; and original claims 3 and 4.

No new matter is introduced through any of the above-referenced amendments and newly added claims.

The Applicant has carefully and thoughtfully considered the Office Action and the comments therein. For the reasons given below, it is submitted that this application is in condition for allowance.

Claim Rejection – 35 U.S.C. § 112, second paragraph

In the Office Action at pp. 2-5, Claims 1-28 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which the Applicants regard as the invention. Applicants respectfully traverse the rejections.

Claim 1

Claim 1 is rejected under § 112, second paragraph because the phrase “a bidentate phosphine of general formula (I)” is recited but no description is provided. Office Action, p. 2. Claim 30, which incorporates the elements of claim 1, includes a description of formula (I). Thus, the rejection is moot, and Applicants respectfully request its withdrawal.

Claims 1, 4 and 19

Claims 1, 4 and 19 are rejected under § 112, second paragraph because the terms “general” and “derivative” are recited, and the Office Action alleges that “the expression is vague and indefinite because the specification does not elaborate what is meant by those terms.” Office Action, p. 3. Claims 19, 30 and 31 (which incorporates the elements of claim 4) have been amended to delete references to “general” and “derivative.” Thus, this rejection is moot, and its withdrawal is respectfully requested.

Claims 1, 4 and 24-25

Claims 1, 4 and 24-25 are rejected under § 112, second paragraph because the phrases “chemically treating the said branched (iso) product to produce the corresponding lactate or the acid of formula II,” “carrying out a treatment step on the said linear (n) product 1-acetoxy $\text{CH}_2\text{CH}_2\text{C}(\text{O})\text{OR}^{28}$ to produce the 3-hydroxy propanoate ester or acid of formula (III),” “by treatment of the branched (ISO) product” and “by treatment of the linear (n) product” are considered “vague and indefinite.” Office Action, p. 3. The Office Action alleges that “the skilled artisan in the art is unable to figure out how the said branched (iso) product or the said linear (n) product can be chemically converted into the corresponding product (lactate) or the acid of formula II.”

Applicants respectfully traverse. The term “treat” is defined in the description on p. 5, lines 14-16, so the skilled artisan is provided its meaning. Furthermore, the appropriate chemical treatment would be known to a person of skill in the art. Accordingly, the claims 24-25 and 30-31 are not indefinite, and Applicants respectfully request withdrawal of this rejection.

Claim 3

Claim 3 is rejected under § 112, second paragraph because the term “Het” is alleged to be “vague and indefinite.” Office Action, p. 3. The Office Action alleges that “the skilled artisan in the art is unable to figure out what kind of ‘Het’ can be for the R¹ to R¹⁸ and R¹⁹ to R²⁷ groups.”

Applicants respectfully traverse. “Het” is defined in the description on p. 12, line 31 – p. 13, line 12 and the skilled artisan therefore has no difficulty understanding the term. Accordingly, Applicants respectfully request withdrawal of this rejection.

Claim 3 is also rejected under § 112, second paragraph because the phrases “one or more substituents selected from hydrogen, lower alkyl . . . or C(O)SR²⁷ or” and “selected from hydrogen, lower alkyl . . . or NR⁴⁶R⁴⁷R⁴⁸” are alleged to be vague and indefinite because “the Markush type of the phrase ‘selected from’ needs the close ended expression ‘and’ in the end instead of ‘or.’” Office Action, p. 3. Applicants have amended claim 3 to recite “and” instead of “or” in the above-referenced locations. Accordingly, this rejection is moot, and Applicants respectfully request its withdrawal.

Claim 3 is further rejected under § 112, second paragraph because the phrase “Q 1, Q 2, and Q 3 (when present) each independently represent phosphorus, arsenic or antimony and in the latter two cases references to phosphine or phosphorous above are amended accordingly” is vague and indefinite. Office Action, p. 4. The Office Action alleges that “the skilled artisan in the art is unable to figure out what is meant by the phrase; particularly, in the case when Q1, Q2 or Q3 is not present.” Applicants have amended claim 3 to remove the phrases “(when present)” and “and in the latter two cases references to phosphine or phosphorous above are amended accordingly.” Furthermore, Applicants note that Q3 is incorporated into the definition of K, D, E and Z as a component of optional substituent -J-Q³(CR¹³(R¹⁴)(R¹⁵))CR¹⁶(R¹⁷)(R¹⁸). See also p. 15, lines 23-24 of the specification. A person of skill in the art would understand that “Q 3 (when present)” refers to the fact that Q3 is not necessarily present. However, the claim has been amended to remove this phrase. Accordingly, Applicants respectfully request withdrawal of this rejection.

Claims 3, 9 and 11

Claims 3, 9 and 11 are rejected under § 112, second paragraph because the terms “comprising” and “containing” are vague and indefinite. Office Action, p. 4. The Office Action

alleges that “these terms would mean that there are some additional components besides a bridging group and a hydroxyl group; the skilled artisan in the art is unable to figure out what else are present in the corresponding compound.”

Applicants respectfully traverse. The use of “containing” in claim 11 is appropriate as the hydroxyl group-containing compound clearly includes substituents other than a hydroxyl group, such as the CH_3 , in the case of methanol. Solely for the purposes of addressing the rejection, the claim has been amended. See specification p. 18, lines 6-20. Similarly, the use of “comprising” in claims 3 and 30 is appropriate because the bridging group may comprise substituents other than the aryl group. Claim 9 has been canceled. Accordingly, Applicants respectfully request withdrawal of this rejection.

Claim 19

Claim 19 is rejected under § 112, second paragraph because the term “for example” is alleged to be vague and indefinite because “it is unclear whether the limitation(s) following the phrase are part of the claimed invention.” Office Action, p. 4. Applicants have amended claim 19 to delete references to “for example.” Thus, this rejection is moot, and its withdrawal is respectfully requested.

Claims 19 and 23

Claims 19 and 23 are rejected under § 112, second paragraph because the phrases “other suitable polymers or copolymers known to those of skill in the art” and “also known as” are alleged to be vague and indefinite. Office Action, p. 4. The Office Action alleges that “the skilled artisan in the art is unable to figure out what they represent the corresponding compounds; these terms are improper to use in the claim languages.” Applicants have amended claim 19 to delete references to “other suitable polymers or copolymers known to those of skill in the art.” Claim 23 has been canceled. Thus, this rejection is moot, and its withdrawal is respectfully requested.

Claims 10 and 19

Claims 10 and 19 are rejected under § 112, second paragraph because the phrase “such as” is alleged to render the claim indefinite. The Office Action alleges that “it is unclear whether

the limitations following the phrases are part of the claimed invention.” Office Action, p. 5. Applicants have amended claims 10 and 19 to delete references to “such as.” Thus, this rejection is moot, and its withdrawal is respectfully requested.

Claims 24-28

Claims 24-28 are rejected under § 112, second paragraph, because “[c]laims 24-28 provide for the use of the catalyst, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass.” The Office Action alleges that “[a] claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.” Office Action, p. 5. Claims 24-26 have been canceled. Claims 27 and 28 have been amended to recite “[a] process.” Claim 27 incorporates the steps recited in claim 30, and claim 28 incorporates the steps recited in claims 27 and 30. Accordingly, Applicants respectfully request withdrawal of this rejection.

Claim rejection – 35 U.S.C. § 101

In the Office Action at p. 5, claims 24-28 are rejected under 35 U.S.C. § 101 because “the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a process claim under 35 U.S.C. 101.” Claims 24-26 have been canceled. Claims 27 and 28 have been amended to recite “[a] process.” Claim 27 incorporates the steps recited in claim 30, and claim 28 incorporates the steps recited in claim 27 and 30. Accordingly, Applicants respectfully request withdrawal of this rejection.

Claim rejection – 35 U.S.C. § 103(a)

In the Office Action at p. 6, claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Patent EP 0495548, to Drent et al. (“Drent”) in view of U.S. Pat. No. 6,307,065, to Tjaden et al. (“Tjaden”). The Office Action alleges that “Drent et al discloses the process for the carbonylation of an olefin” (p. 6) and acknowledges that “the instant invention, however, differs from the prior art in that the part of the bidentate is an aryl compound and the products of the reaction are separated by distillation[]” (p. 8). The Office Action states that “the skilled artisan in the art would be motivated to use Tjaden’s et al bi(2,2’-

diphenylphosphinomethyl)biphenyl as an alternative in the Drent et al process.” Office Action, p. 10.

Applicants respectfully traverse. The references, considered alone or in combination, do not disclose or suggest every element of the claims. Accordingly, a *prima facie* case of obviousness has not been made out.

Independent claim 3 recites “[a] process for the carbonylation of vinyl acetate comprising reacting a vinyl acetate compound of formula (IV) . . . with carbon monoxide in the presence of a source of hydroxyl groups and of a catalyst system, the catalyst system obtainable by combining: (a) a metal of Group VIII B or a compound thereof; and (b) a bidentate phosphine, arsine or stibine of formula (I).]” Independent claims 30 and 31 are similar to claim 3 in aspects relevant here.

Drent discloses the carbonylation of olefins (Abstract), in particular as it relates to the preparation of alkylpropionates (p. 2, lines 3-4). The disclosed carbonylation process employs a catalyst system obtainable by combining a group VIII metal or a compound thereof and a bidentate phosphine, arsine and/or stibine derivative (p.2, lines 39-43). However, as the Office Action acknowledges, Drent does not disclose, for example, the claimed bidentate phosphine. Instead, Drent discloses a bidentate phosphine with a “bridging group with at least 2 carbon atoms” (p. 2, lines 48-49) arranged in a “carbon chain” (p. 2, line 57). Accordingly, Drent does not disclose or suggest all elements of the present claims.

Tjaden does not cure the defects in Drent. Tjaden discloses a process for producing one or more substituted or unsubstituted epsilon caprolactones or hydrates or esters thereof. Abstract. The process employs penten-1-ols, for example 3-penten-1-ol, as its starting material. Col. 1, lines 37-42. The process also uses a carbonylation catalyst. Col. 1, line 48. Tjaden also discloses a process for converting an alkadiene to a penten-1-ol for use in the carbonylation reaction. This process uses a hydrocarbonylation catalyst. Col. 1, lines 51-65. However, Tjaden does not disclose, for example, the claimed bidentate phosphine. The bidentate phosphine bi(2,2'-diphenylphosphinomethyl)biphenyl, referenced by the Office Action, is not within the definition of the claimed bidentate phosphine. For example, the claimed bidentate phosphines have (a) Q¹ and Q² atoms joined to the aromatic ring bridging group on adjacent cyclic atoms of the ring. In addition, (b) the Q¹ and Q² atoms are substituted with a group connected via a tertiary carbon atom. The bidentate phosphine disclosed in Tjaden and referenced in the Office

Action has neither inventive feature (a) or (b). Furthermore, the other phosphines disclosed in Tjaden lacks one or both of these features (see, e.g., col. 8, line 59-col. 9, line 60).

For at least these reasons, the references, whether considered alone or in combination, do not disclose or suggest every element of the claims. Accordingly, a *prima facie* case of obviousness has not been made out. Independent claims 3, 30, and 31 all recite the bidentate phosphine of Formula I and are thus patentable over the combination of Drent and Tjaden. Claims 2, 5-8, 10-23, and 27-28 all depend from claim 30 and are allowable as being dependent from an allowable claim. Similarly, claim 29 depends from claim 3 and is allowable as being dependent from an allowable claim.

In view of the fact that the Office Action rejects only claims 1-20 under 35 U.S.C. § 103(a), Applicants assume claims 21-23 and 27-28 are free of the prior art.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

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Respectfully submitted,

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